



## NOAA FISHERIES SERVICE

### Southwest Fisheries Science Center

- Size: 10 m wide, 20 m long and 10m deep
- Capacity: 2,000,000 liters
- Temperature range: 2°- 25°C
- Salinity range: 0 to 35 ppt
- Nine observation ports on two decks
- Removable trusses and insulated panels covering water surface
- Vibration and seismic isolation
- Water conditioned using a combination of sand filters, ultra-violet radiation, ozone and degassing units
- Ability to accommodate live animals
- 12-hour re-circulation cycle

<http://swfsc.noaa.gov>

## The Ocean Technology Development Tank: Pioneering SWFSC's Advanced Survey Technologies

The new SWFSC laboratory in La Jolla houses a large-scale controlled-environment Ocean Technology Development Tank. This world-class facility will expand NOAA's ability to develop and apply advanced technologies for ecosystem-based surveys of fish and protected species and will foster collaborations on ocean sampling technologies with local, regional and international partners.

With the construction of the Ocean Technology Development Tank, the SWFSC will continue its pioneering work in the development and use of acoustical and optical technologies for non-lethal fisheries surveys, surveys of protected species (such as marine mammals, seabirds, marine turtles and abalone) and their associated habitats. The tank will be used to test sensor performance as well as deployment platforms such as instrumented buoys and small craft, remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), gliders, untethered profilers, drifters, floats and traditional nets. The tank will provide a controlled environment to develop, test, and calibrate these technologies before deploying them during fisheries surveys or at remote locations at sea. This unique research facility will help NOAA create the next generation of fisheries and oceanographic instrumentation essential for achieving its current and future missions. It will also enhance collaborations with the community of ocean scientists and engineers from academia, industry and government.



## One-of-a-Kind Facility to Develop and Test Advanced Technologies

As electronic and optic components become smaller, more capable and less expensive, the development and application of these technologies is rapidly expanding. However, new construction of seawater tank facilities for testing and calibrating these new technologies in controlled environments is virtually non-existent. Although several facilities in the United States and abroad have some form of a test tank, no tank currently exists that has all the characteristics required to realize the advanced technologies essential for achieving NOAA's current and future missions. The SWFSC Ocean Technology Development Tank will be the only large (10 m wide by 20 m long by 10 m deep), thermohaline-controlled test



## NOAA FISHERIES SERVICE

### Southwest Fisheries Science Center

### Ocean Technology Development Tank

---

---

Researchers interested in the capabilities of the Ocean Technology Development Test Tank and in acquiring tank time for testing instrumentation or for conducting experiments requiring a controlled water environment, please contact:

Roger Hewitt, PhD  
Assistant Center Director  
[Roger.Hewitt@noaa.gov](mailto:Roger.Hewitt@noaa.gov)  
858-546-5602

<http://swfsc.noaa.gov>

tank facility in the world which is also able to accommodate live animals. It will fill the gap in developing and testing sampling technologies so they can be deployed to improve the quality, quantity and efficiency of NOAA's research and monitoring operations.

#### Ocean Technology Development Tank will be a National Resource

The tank is of sufficient size to calibrate and test a wide variety of instruments with minimal boundary effects and water conditions can be controlled over a broad range of temperatures and salinities. Examples of experiments that could be performed in the tank include: calibration and performance testing of transducer and hydrophone arrays; testing of underwater cameras, strobe and laser systems; testing of gliders, autonomous underwater vehicles, floats, drifters, tags and fishing nets; and characterization of the behavior of marine animals and their response to remote sensors. These capabilities will support scientists developing advanced survey technologies throughout NMFS and NOAA, as well as instrument developers from other institutions.

#### Meeting the Public Demand for Ecosystem Observations and Data

NOAA is experiencing an unprecedented demand for observational data to support resource and ecosystem assessments. More than ever before, there is a need for data to address more species and more aspects of their ecosystems, on finer spatial and temporal scales. New technologies must be incorporated into our observation systems to meet the public demand for information to support the management of marine resources. NOAA and the scientists at the SWFSC have a long history in the development and use of active acoustics, optics and instrumented platforms for surveys of a wide spectrum of species, habitats and applications. Examples of current and future applications of advanced technologies include:

- Surveying marine mammals using towed acoustic arrays;
- Estimating abundances of rockfishes over high-relief habitats and without capturing the fish or damaging the sea floor;
- Conducting acoustic surveys of areas of the California Current and Southern Ocean and estimating the abundance and distribution of krill and fishes;
- Detecting and classifying marine mammals and fishes using the sounds they emit;
- Describing migratory behavior and habitat use by marine mammals, turtles, pinnipeds, penguins and fishes using autonomous instruments attached to the animals;
- Enumerating juvenile salmon departing the spawning grounds and transiting through estuaries to the ocean and adults returning to spawn;
- Investigating the response of fish to passing survey vessels and traditional sampling techniques such as trawl nets;
- Collecting high-resolution temporal data at a grid of fixed locations using instrumented buoys and telemetering data sets back to land.